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A Quantitative Investigation into the Authenticity Well-being Statistical Relationship within Person-Centred Psychotherapy

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Abstract

Purpose: The purpose of this quantitative study was to investigate the statistical relationship between client authenticity and well-being across the duration of person-centred psychotherapy. In doing so, Rogers' (1959) assertion that person-centred psychotherapy affects personality change towards greater authenticity, optimal functioning, and well-being, will be tested. Findings from this study will reveal insights into the change process for clients of person-centred psychotherapy. Specifically, this research represents an important step towards providing a clear picture of what clients could expect when engaged in therapy by offering a statistically robust and stable depiction of the change process over time. Additionally, this research will serve as a steppingstone for future researchers wishing to explore more deeply and work towards the longitudinal analysis of the Human Flourishing Project's client research data.

Research Questions: Based on the purpose of this study, the following questions will be answered. Does person-centred psychotherapy affect a change in personality towards greater authenticity as originally suggested by Rogers (1959)? Additionally, what is the statistical relationship between successive person-centred psychotherapy sessions and client scores on the Authenticity Scale and Scale of Well-being?

Methodology: This study employed a quantitative correlational design consisting of correlation and regression analysis to investigate the aims of this investigation. Data was collected from the Human Flourishing Project's research data bank targeting client outcome scores on the Scales of Authenticity measures and 14-item Scales of General Well-Being (14-SGWB). The relationship between client authenticity and well-being scores with successive psychotherapy sessions was investigated with a Linear regression and Bivariate correlation analysis using SPSS statistical software.

Findings: Analysis of the data suggests that overall, a positive relationship exists between the Full AS and AL subscale with GWB scores. However, a negative relationship between AEI and SA with well-being scores was found. Additionally, an increase in psychotherapy sessions was found to be predictive of scores on the Full AS and SA subscale as well as GWB scores but not of scores on the AL and AEI subscales.

Discussion: The present investigation addressed the gap in literature concerning the investigation of the authenticity well-being relationship and change process within the psychotherapeutic context by examining psychometric data throughout several person-centred psychotherapy sessions. It can be asserted that engaging in person-centred psychotherapy can facilitate personality change towards authenticity and that such change is associated with an increase in well-being. To explore the causality of this relationship future longitudinal research is warranted.

Introduction

This quantitative research study aims to explore key theoretical assumptions of the person-centred approach by testing Rogers's (1959) assertion that person-centred psychotherapy affects personality change towards greater authenticity, synonymous with the more fully functioning person. To do so, this study will theoretically and empirically investigate the relationship between the two variables within the psychotherapy session, looking for any correlations that may exist. Furthermore, this study will also examine whether person-centred therapy facilitated authenticity change is at all associated with client well-being. Previous research has researched and documented this relationship from several settings. However, few have examined this relationship from a purely person-centred perspective within the context of the psychotherapy session and those that have did so decades ago. Therefore, this study intends to address this gap in the research literature by inquiring into this relationship within the context of a trainee ran and operated psychotherapeutic research clinic. Based on previous research findings it is expected that a positive correlation will exist between authenticity and well-being within the context outlined above. Rogers assumed an optimal set of conditions for facilitating personality change towards greater authenticity. Therefore, it can be suggested that those who engaged with trainee-led psychotherapy at the Human Flourishing Project were offered and experienced these conditions, facilitating personality change towards greater authenticity. Finally, by calling into question key person-centred theoretical assumptions and testing them within the confines of a trainee-led psychotherapy clinic this study intends not only to reaffirm the efficacy of the approach and its understanding of the personality change process, but the efficacy of trainee offered person-centred psychotherapy as well.

Proceeding the Introduction, chapter 2 will present a literature review covering several topics pertinent to the study at hand. Starting with Rogers's initial conception and proposition of the therapeutic change process, the theoretical and philosophical underpinnings of the person-centred approach will be discussed. Next, the concepts of authenticity and well-being will be discussed with a proceeding discussion on associated measures. Concluding the literature review, exploration and discussion of previous research related to the authenticity well-being relationship will be presented. The wider body of research literature providing evidence for the relationship will be used to highlight an apparent gap in the research literature.

The research methods are presented in Chapter 3. A synopsis is provided, discussing the research study, explaining how it will be conducted. Guiding information on the research design, participant sampling, ethical consideration, and a detailed description of psychometric measures will be provided as a road map for the current research.

The proceeding is Chapter 4 which will present the results and analysis of the collected data. Information related to participant demographics, descriptive and inferential statistics, will be presented followed by analytical statistics. An explanation of the hypotheses and research question will be discussed statistically.

Chapter 5 will present a discussion of the results in detail specifically focusing on explaining the results of the study concerning the hypothesis and research question. At this point the limitations of the research project and projections for future research will be discussed, ending with concluding remarks.

Literature review

A conception and process scale of personality change (Rogers, 1959)

The current study seeks to investigate if person centred psychotherapy clients' experiences change as described by Rogers (1959). After observing and conducting numerous psychotherapy sessions Rogers began to hypothesize that he could identify the hallmarks of personality change that were common amongst therapy clients. What proceeded was a theoretical structuring of his observation into a 7-stage continuum of personality change that describes a stagewise process experienced by clients of his psychotherapy practice. He suggested that those who received the necessary and sufficient conditions of therapeutic personality would experience changes in their relationship with their feelings and others, their degree of incongruence, their manner and construing of experience, and their communication of self, towards a more fully functioning way of being. Rogers's subsequent research into these theoretical assumptions would yield support for his assumptions and lay the foundations for future studies into the psychotherapeutic change process. Later theorists would join in his pursuit of bringing the lens of empiricism to psychotherapy (Hart, 1961; Tomlinson, 1959; Vander Veen, 1961; Walker, Rablen, & Rogers, 1960), verifying his initial conception of the change process. However, in the decades following Rogers's initial findings, there has been little research revisiting his change process. Thus, is the above research enough to say with certainty that person-centred psychotherapy can induce personality change as suggested? The current study would argue, no. The number of studies looking into and verifying Rogers's initial observations is not enough to say with certainty that this specific modality of therapy can induce personality change towards greater authenticity. Further research is needed, and the current study aims to do just that.

Historical overview of authenticity, well-being, and psychotherapeutic practices

Within many psychotherapeutic modalities, authenticity is viewed as integral for creating beneficial change within the individual, leading to enhanced wellbeing (Horney, 1951; May, 1981; Rogers, 1961; Winnicott, 1965; Yalom, 1980). To be authentic is to experience well-being. Thus, the inauthentic individual is seen as straying away from personal well-being and the mark of psychopathology. Within existentialism, authenticity is associated with optimal mental health functioning and well-being with Kierkegaard (2013) asserting that "for to will to be that self which one truly is, is indeed the opposite of despair" (p. 298) A sentiment such as this evokes a focus on authenticity as an important aspect of human experience that can reveal basic truths of one's self. Across a variety of psychological fields, a similar understanding of authenticity and its relationship with well-being are found with various modalities of psychotherapy concerning themselves with this interconnection (Rogers, 1959; Rogers, 1964; Rogers,1980; Yalom, 1980). It is thought that understanding the particulars of individual authenticity can reveal more of an understanding of wellbeing and bolster the direction of human experience away from psychopathology. Despite philosophical, psychological, and psychotherapeutic research interest into authenticity there is a lack of psychometrically valid tools to aid in this endeavour (Sheldon, 2004). It wasn't until Wood et al. (2008) conceptualization and development of the Scale of Authenticity that research communities had a psychometrically valid tool to aid their research interest. Benefiting from this advancement the current study will employ these advancements in psychometric research.

Definitions

Rogers applied his definition of authenticity, often used interchangeably with congruence and genuineness, to the psychotherapeutic process in Rogers (1957). For him, congruence was comprised of two elements. Firstly, the degree to which the therapists were themselves and how accurately their awareness represented their experience. The second part was the ability to convey this way of being through words and actions. Notable is Rogers's focus on congruence as a therapist offered condition, as later theorists would come to recognise the importance of the client's experience. Barrett-Lennard (1962) highlights the importance of the client's experience, emphasising the client's perception of congruence as integral to the outcomes of psychotherapy. As a result, his work would perpetuate the idea that congruence needs to be constructed around the experiences and perceptions of the client. Gelso (2002) describes the real relationship between the client and the therapist as comprising of two parts, genuineness, and realism. Framing genuineness this way seems to overlap with Rogers's view on congruence, with Gelso further suggesting that this conception is in line with earlier psychoanalytical writings of Greeson (1967) as the real relationship is unimpacted by transference related processes. In this case, genuineness is characterised by trueness to oneself and authentically being in the here and now. Like Barrett-Lennard's conception, Gelso et al. (2012) framework of congruence includes the therapist and client's experience in the real psychotherapeutic relationship. Whether one uses the descriptor of congruence, authenticity, or genuineness it is easy to see the variety in the interpretation and conceptualization of this relational construct. Such diversity will inevitably lead to challenges in researching this area of interest, which will be elaborated on below.

Authenticity and its measure

Researching the authenticity, well-being link has proved challenging within the research community as there is definitional confusion surrounding authenticity (Harter, 2002). As there is no single, agreed-upon definition for authenticity, the research community has produced a myriad of definitions that make continued research a complex and confusing task (Wood et al., 2008). However, within the person-centred approach, authenticity has been explored in detail leading to a consensus on its definition and a clear understanding (Wyatt, 2001). As such, adopting a person-centred conception of authenticity will facilitate the current study's investigation into the authenticity well-being link.

The model as described by Wood et al., (2008) delineates generally a 3-part construction of authenticity. The first aspect of authenticity centres around *Self-Alienation* and the mismatch between one's conscious awareness and their lived experience. Simply put, the first aspect is the degree to which an individual experiences self-alienation between their subjective experience and their outward experience. The second aspect of authenticity, *Authentic Living*, refers to the congruence between one's conscious experience and behaviours. The degree to which individual acts per their internal experience of thoughts, feelings, and emotions can be said to be authentically living. The third component of authenticity, *Accepting External Influence,* is the degree to which an individual brings into themselves the views of others. Taken together, acceptance of external influences affects both feelings of self-alienation and one's experience of authentic living, making up the 3-part conception of authenticity (Wood et al., 2008). From this, the Scale of Authenticity was created to measure the 3-part definition outlined above.

Well-being and its measures

The connection between well-being and psychotherapy is a diverse and rich topic to explore. However, researching well-being brings out similar problems to researching

authenticity. Historically, well-being has been synonymous with positive psychological functioning. Many prominent figures have touched upon this topic including Maslow's concept of self-actualization, Rogers's view of the fully-functioning persons, and Allport's presentation of maturity (Maslow, 1968; Rogers, 1961; Allport, 1961). What is evident is a diverse and ever-changing understanding and model of well-being, with the very notion of well-being dependant on who you ask. Beyond those mentioned above, conceptualizing and defining well-being has continued over the years with others defining it from a developmental life span perspective that emphasizes overcoming challenges that occur across an individual's life span. These include Erickson's Stagewise Psychosocial Model of Development and Buhler's life tendencies that speak towards the fulfilment of one's life (Buhler 1935, 1968; Erickson, 1959). In talking about the diverse conceptualization of well-being, the difficult nature of trying to operationalize and research well-being is highlighted. Ryff and Singer (1996) write that when one examines the various ways in which scholars and their theories have characterised well-being, many similarities can be seen between them. It is from taking stock of these similarities that a more unified understanding of well-being can be distilled.

It is from this exploration and drive to unify the understanding of well-being that the academic community resulted in the formation and publication of a variety of measures of well-being. Alongside what was discussed above, Longo, Coyne and Joseph (2017) analysed the most widely employed conceptions of well-being. Specifically, they looked at Diener et al., (2010) and their conception of well-being which focused on self-perceptions of success in relationships, self-esteem, purpose, and optimism. They also drew upon Huppert and So (2013) who purported a ten-part conception of well-being, including areas such as vitality, self-awareness, and self-acceptance to name a few. Further, Keyes (2002) was examined. They put forth a conception of

well-being that describes symptoms of mental health, with these symptoms describing the mentally healthy rather than the mentally unwell. Additionally, Ryan, Huta, and Deci (2008) characterise well-being as a model of eudaimonia characterised by self-determination theory and four motivational concepts including intrinsic motivation, autonomy, mindfulness, and satisfying psychological needs. Lastly, Seligman (2018) and Waterman et al., (2010) also present complimentary models and conceptions of well-being comprised of various facets. Overall, all six of these publications offered a varied depiction of well-being from which Longo, Coyne and Joseph (2017) developed a more unified and succinct understanding of well-being that would be later used to develop their own scale of well-being. The 14-item Scale of Subjective Well-Being (SGWB) identified 14 facets of well-being including connection, congruence, significance, purpose, development, competence, self-worth, self-acceptance, self-awareness, involvement, optimism, calmness, vitality, and happiness.

Research against the authenticity well-being relationship

Although the relationship between authenticity and well-being is well established within the research literature, there still exists a subset of reports that cast doubt on its nature and existence. Several research articles call into question the nature and existence of the authenticity well-being relationship, citing mixed reports of the relationship's strength within research literature (Baird, Le, and Lucas, 2006) with others questioning the validity of authenticity measures and its vulnerability to extraneous variables including positively valenced behaviours (Fleeson and Wilt, 2010; Jongman-Sereno and Leary 2016; Rivera et al., 2019). One argument is that these measures may be so confounded with valenced self-evaluations (e.g., self-esteem), that they may be empirically indistinguishable from each other (Rivera et al., 2019). However, such claims can be challenged as there is research to suggest that authenticity is distinguishable from

self-esteem. For example, Kernis (2003) describes how authenticity can have varying relationships with different kinds of self-esteem, such as secure self-esteem. Overall, the argument that measures of authenticity are confounded by valence is challenged by the Scale of Authenticity as it is a statistically valid with convergent validity with self-esteem, subjective well-being, and psychological well-being.

Previous research on authenticity and Well-being

Research into the authenticity, well-being relationship has culminated in a diverse research base which will be explored below. However, few research studies are looking into this connection from a psychotherapeutic perspective let alone a person-centred one. One of the earliest studies to examine this relationship from this perspective was Rogers's process conception and scale of therapeutic personality change offering one of the earliest attempts to explore the relationship from a psychotherapeutic context (Rogers, 1958). Since his early exploration into this area, research has proliferated into a variety of studies including some longitudinal investigations. Reinecke and Trepte (2014) investigated the reciprocal effects of authenticity on social media and its relationship with well-being over a year, employing a two-wave panel design that surveyed 566 participants in the first wave, and 457 participants in the second wave. They found that online authenticity was positively associated with subjective well-being. The longitudinal nature of their study offers strong evidence for the nature of this relationship. As well, Impett et al., (2008) investigated relationship authenticity and promoting self-esteem across a five-year period in adolescent girls from grade 8 to grade 12. They found that authenticity increased linearly with self-esteem from grade 8 to 12, further providing strong longitudinal evidence of the positive authenticity well-being relationship.

Moreover, the wider body of psychological research on authenticity and well-being appears to support Rogers's understanding of the fully-functioning person. In a four-part study, Thomaes et al. (2017) found that authenticity enhances adolescents' subjective well-being and co-varies with the degree to which one's needs for relatedness and competence are met while being mediated by the satisfaction of the need for autonomy. In another study, Sutton (2020) conducted a meta-analysis and identified 75 studies exploring the interconnection between authenticity and well-being, and authenticity and engagement, searching for the impact of various moderators including age and gender. The results of this study found a positive relationship of (*r =.40)*. Several studies suggest authenticity is a predictor of a variety of well-being indicators (Rivera et al., 2019). Specifically, authenticity has been linked to measures of subjective happiness, self-esteem, and life satisfaction (e.g., Goldman & Kernis, 2002; Reinecke & Trepte, 2014; Ryan, LaGuardia, & Rawsthorne, 2005; Sariçam, 2015; Sheldon, Ryan, Rawsthorne, & Ilardi, 1997; Smallenbroek, Zelenski, & Whelan, 2017; Wood et al., 2008). Although not an exhaustive list, the above showcases the multitude of diverse research endeavours into this focus area.

The wider body of literature offers numerous examples of evidence supporting the existence and positive relationship between authenticity and well-being but few document its existence within the psychotherapy session, as it is just assumed. This research hopes to address this by investigating these variables within the therapy session. More importantly, however, the above illustrates how the research base has neglected the investigation within the psychotherapeutic contexts. More research is needed to fill this gap as not enough exists. Thus, what follows below is an exploration of the small but growing research base exploring this relationship from a psychotherapeutic context.

Research in the psychotherapeutic context

There are relatively few research studies that explore the relationship between client authenticity and well-being. Bayliss-Conway et al., (2020) are one of them, looking into the relationship between experiencing a therapeutic relationship and subsequent client authenticity. The findings of their research indicated that the therapeutic relationship was associated with greater authenticity. Similarly, Kim, Joseph, and Price, (2020) research aims were to test whether relational depth was associated with key person-centred concepts, unconditional positive regard, and authenticity. They found that within the context of person-centred psychotherapy, relational depth was associated with an increase in authenticity. In addition to this, a study conducted by Boyraz, Waits, and Felix (2014), looked into the link between authenticity and well-being using a cross-lagged panel analysis. The results of this study found that scores on the Authenticity Scale were predictive of enhanced well-being. While the research described above supports Rogers's assumption that psychotherapy can affect personality change towards greater authenticity, more research, specifically quantitative research, is needed to investigate the relationship between client authenticity and well-being, within the context of a person-centred psychotherapy clinic. This study hopes to extend the research focus to under-researched areas.

Aims of current investigations

Having identified a gap in the research literature and a lack of continued investigation into core Rogerian theory, the current study aims to employ statistical analysis to fill the gap and continue where Rogers left off by investigating the change process and relationship between Authenticity and Well-Being Scale scores throughout the duration of person-centred psychotherapy sessions. It is hypothesized that clients, throughout person-centred psychotherapy,

will become more authentic, experiencing greater well-being, with said change in authenticity being positively correlated with well-being.

Research question

The current study asks the following questions:

1. Do person-centred psychotherapy clients experience personality changes towards greater authenticity as suggested by Rogers (1959)?
2. What is the statistical relationship between client authenticity and well-being?

Hypotheses

This study puts forward 2 hypotheses:

1. Predicts person-centred psychotherapy clients will experience personality change towards greater authenticity throughout successive psychotherapy sessions.
2. There will be a significant positive correlation between client scores on the Scale of Authenticity and 14-Items Scales of General Well-Being

Methodology

The purpose of this study is to explore statistically the relationship between authenticity and subjective well-being within the psychotherapy session context. This relationship will be explored in several ways. First, this study intends to see if individuals who undergo psychotherapy experience any changes in their self-reported levels of authenticity. Investigating change in authenticity in response to person-centred psychotherapy will take on two major focuses. The first focus will examine the overall score of authenticity for each participant and how it changes throughout psychotherapy as well as examining how each of the three facets of

authenticity (self-alienation, authentic living, and accepting external influences) change individually throughout therapy. Going further, individual authenticity will be investigated with individual subjective well-being. Again, the relationship between the individual facets of authenticity will be investigated with clients' subjective well-being to ascertain if any relationship exists between them. The following section will discuss the setting and population being investigated, the measurement instruments and sources of data, the procedures for conducting the study, and how the data will be analysed.

Research Design

A quantitative correlational research design will be employed to investigate the relationship between scores on the Authenticity Scale and Scale of General Well-Being within the context of the person-centred psychotherapy session whilst also testing Rogers's assumption that person-centred psychotherapy affects personality change towards greater authenticity. This design was selected for its suitability for examining statistically the relationship between the two variables. Analysing this way will allow this investigation to determine the strength of the relationship without controlling or manipulating the variables while also determining the direction of the correlation.

The setting and population

The data being investigated was obtained from the Human Flourishing Project Research Centre. This project is a psychotherapy clinic associated with the MA Person-Centred Experiential Counselling and Psychotherapy course, School of Education at the University of Nottingham. The clinic has the expressed goal of engaging in high-quality therapeutic practice-derived and evidence-based outcome research on client services, enabling the accrual of practice-based case study research. For these reasons, the Human Flourishing Project and their wealth of

research data was selected for use in the current study. The therapy offered to clients of the research clinic was delivered by trainee therapists of mixed age and gender while on placement. Therapy was offered weekly by therapists adhering to a person-centred approach to psychotherapy. Each session lasted 50 minutes. Notably, the therapy offered was at the trainee level therefore the quality and embodiment of the therapeutic approach varied reflecting the trainee status of the therapist. Their project implemented a research protocol in which clients undergoing psychotherapy were given 2 blocks of 20 psychotherapy sessions. They were asked to fill out a variety of psychometric measures which included those for authenticity and well-being. This data set was recorded across a four-year period, from 2017 until 2020. As of December 2020, 575 participants make up the HFP's data set. Due to the ongoing Covid-19 pandemic and associated restrictions, a more up-to-date data set was unable to be obtained. Ethical approval for this study was approved by the University of Nottingham Ethics Committee. All historical data used in the current study was obtained from participants who gave informed consent, were briefed on the nature of the research, how it would be used, and their right to withdraw from the study at any point. Following proper data handling practices, all research data was collected and stored per the Data Protection Act.

Measures

What follows below is a brief on the psychometric measures used in the current study's research data. Wood et al., (2008) Scale of Authenticity and Longo et al., (2017) Scale of General Well-Being (14-SGWB) will be discussed below.

The Authenticity Scale is comprised of 12 items that are subdivided into 3 distinct subscales. These include authentic living, self-alienation, and accepting external influences. Items on this scale are presented on a 1 to 7 Likert scale with responses ranging from 1 (does not

describe me at all) to 7 (describes me very well). Some subscale scores are coded inversely but this will be discussed in greater detail below. The 3 subscales internal consistency was reported to be .69 for Authentic Living, .78 for Accepting External Influence, and .78 for Self-Alienation. In generating the data used by the current study the HFP administered this measure initially, at client intake, and at specific testing times across of psychotherapy sessions (see Table 1).

The 14-item Scale of General Well-Being is a brief assessment tool designed to assess individual well-being. This measure is based upon 14 facets of well-being including connection, congruence, significance, purpose, development, competence, self-worth, self-acceptance, self-awareness, involvement, optimism, calmness, vitality, and happiness. The internal consistency reliability was found to be .86 confirming a high degree of inter-relationship between the 14 items. Items on this measure are presented similarly to the authenticity scale mentioned above with items consisting of self-referent statements related to well-being to which respondents provide responses ranging from “not true at all” to “very true”. The rational for using the above measures and the data generated by them was determined by the current research studies use of the Human Flourishing Projects research data bank. This measure was administered at intake and at specific testing times across 40 psychotherapy sessions (see Table 1).

Procedures for conducting the study

The two hypotheses that will be investigated predict that (1) change in client authenticity will be consistent with Rogers’s (1959) findings; that one moves towards greater authenticity over the course of person-centred psychotherapy and (2) there will be a positive relationship between client authenticity and well-being. To test these hypothesises the procedure of the current study will be discussed below.

Data exploration and dealing with missing data

From preliminary exploration of the dataset, this study noted that 478 participants in the survey attended one or more of the therapy sessions. There was a total of 10 sessions plus an intake session labelled as Intake, Session 1, Session 3, Session 5, Session 10, Session 15, Session 20, Session 25, Session 30, Session 35, and Session 40. The number of participants who attended the sessions is indicated below (see Table. 1):

Table 1

Number of included sessions and participant representation

Session	Number of Participants	% of Total
Intake	384	80.33%
Session 1	356	74.48%
Session 3	0	0.00%
Session 5	251	52.51%
Session 10	185	38.70%
Session 15	116	24.27%
Session 20	90	18.83%
Session 25	51	10.55%
Session 30	33	6.90%
Session 35	29	6.07%
Session 40	20	4.18%

Note: AS and GWB measures administered at each session listed in Table 1. The red denotes excluded data

As a first level of dealing with missing data, Session 3 will be dropped as it does not contain any responses for Authenticity and General Wellbeing survey questions. Sessions 30, 35, and 40 will also be excluded due to a large degree of missing data (over 90% of the participants did not attend these sessions).

Sessions 1, 5, 10, 15, 10, 25, and intake sessions will be selected from the data because they have a sufficient number of Participants. Although the participants in sessions 20 and 25 are tending

towards the low scale, the sessions will still be included to ensure a considerable number of sessions are available for testing of H1.

Of the 478 participants in the therapy, only those who attended 4 or more of the sessions (about 57% of the sessions) will be included; and only responses for the sessions that were attended will be included. This is to limit the extent of the imputation of missing data, which would significantly distort the results of the analysis.

The final dataset from this procedure includes 646 entries consisting of 129 respondents across the 7 chosen sessions.

From the final dataset, the missing responses will then be replaced with the modal response a participant gave for (1) The General Wellbeing scale and (2) The Authenticity subscales respectively. The understanding here is that a participant's modal response across a related set of questions should give a reasonable idea of the most likely response they would give to a similar question if that question had not been answered by the participant.

Data analysis

The following variables will be applied in this Analysis (**see Table 2.):**

Table 2

Variables and their description

Variable	Description
Full Authenticity Scale (AS)	This will be derived as average of the scores of all responses under Authenticity; applying reverse scoring for questions under SA and AEI
Authentic Living (AL)	This will be derived as the average of the scores of Authentic Living questions under Authenticity
Accepting External Influence (AEI)	This will be derived as the average of the scores of Accepting of External Influence questions under Authenticity

Self-Alienation (SA)	This will be derived as the average of the scores of Self Alienation questions under Authenticity
General Well-Being (GWB)	This will be derived as average of the scores of all responses under General Wellbeing
Session_ID	This variable will be derived by assigning arbitrary numerical values to each of the 7 sessions so as to create a sort of continuous scale on which to assess how the Authenticity scale and subscales change with sessions overtime. For simplicity, we will assign numerical number 1 to the Intake Session, numerical number 2 to Session 1, numerical number 3 to Session 5 and so on. This transforms the sessions into a continuous increasing interval analogous to a time interval; thereby allowing for the use of Linear Regression to assess Hypothesis H1.

To conduct the following research study, appropriate statistical analysis is required. As numerical psychometric data was available, and the purpose of the study focuses on investigating the relationship between variables, Bivariate Correlation and Linear Regression Analysis would be an appropriate method for the study at hand. In helping to understand the correlation will quantify the strength of the relationship between authenticity and well-being scores while also giving us the direction of the relationships whereas linear regression will allow us to predict whether authenticity and well-being scores increase or decrease throughout the sampled psychotherapy sessions. To properly assess the relationship between scores from the two measures, linear regression will be conducted on the Full Authenticity scale (AS), Accepting External Influence (AEI), Authentic Living (AL), Self-Alienation (SA) subscales, and General Well-Being (GWB) scale scores. Reverse scoring will be employed on the SA and AEI subscales when analysing the Full AS scores.

However, before Bivariate Correlational Analysis can be carried out, the appropriateness of the selected statical tests needs to be checked against the data being analysed. As such, the

data under investigation will be evaluated against a number of assumptions including continuousness of measurement, Normality, Linearity, Outliers and Homoscedasticity of variable distribution. Descriptive statistics will be calculated to provide a clearer picture of the distribution of responses.

Hypothesis testing

For the proposed hypotheses linear regression and Bivariate correlation will be used to investigate H1 and H2, respectively.

Results

The setting for this study was The Human Flourishing Project, a psychotherapy clinic. The clinic generated a sizable psychometric data set, providing a valuable resource of raw data from undertaking multiple years of research within the context of person-centred psychotherapy sessions. The purpose of this study was to investigate the nature of the statical relationship between authenticity and well-being experienced by individuals undergoing person-centred psychotherapy, while also testing a fundamental assumption of person-centred theory, that psychotherapy, as outlined by Carl Rogers, affects a personality change towards greater authenticity.

Participants.

In the sample of 129 participants, age ranged from 21 to 79 years (M= 41.3, SD=13.7). Of the sample population, 60.2% were female, 33.6 % were male, and 6.2% did not specify gender. The majority of respondents were 70% white, with the remainder being 0.8% Asian, 2.3% Black British, 1.5% Bulgarian, 1.1% mixed race, 0.6% mixed race white and Asian, and 14.7 % listed their ethnicity as other.

Descriptive statistics

The descriptive statistics were calculated for all scale and their associated subscales and presented in the table below (see Table 3).

Table 3. Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Full AS Scale	646	.6666666666667	6.333333333333	3.499161506708	.9895784725708	-.054	.096	-.044	.192
AL Scale	646	1.000	7.000	5.01529	1.273380	-.672	.096	-.012	.192
AEI Scale	646	1.00	7.00	4.1022	1.35201	.003	.096	-.560	.192
SA Scale	646	1.00	7.00	4.4156	1.65593	-.251	.096	-.846	.192
GWB Scale	646	1.000000000000	5.000000000000	2.590112620861	.8829230777573	.362	.096	-.427	.192
Age	646	21.00000000000	79.06091718001	41.30817375802	13.70472990802	.653	.096	-.291	.192
Valid N (listwise)	646								

[a] AL- authentic living, AEI - aceepting external Influence, SA - self-alienation, GWB - general well-being

Assumption testing for Linear Regression and Pearson Correlation

Casson and Farmer (2014) describe a variety of assumptions that need to be checked before conducting Linear Regression and Pearson's correlation analysis. As such, the data was checked against the assumption below and no violations were found.

Assumption 1: When conducting Linear Regression and Pearson Correlation, the variables being measured should be measured at the continuous level. As shown in Appendix 1, this is indeed the case for the current study as all variables under investigation are averages of responses from the two measures of Authenticity and Well-Being and are therefore continuous. The Authenticity Scale variables can take on any values between the interval of 1 and 7; whereas the General Well-Being variables can take on any values between 1 and 5.

Assumption 2: There needs to be a linear relationship between the two variables. This study used a Deviation from Linearity test and Scatter plots on SPSS to determine whether the relationship

between the variables was linear. The results and scatter plots are presented below in Appendix 1 and 2. No violation was reported.

Assumption 3: There should be no significant outliers. To test for outliers, the minimum and maximum limits for each dependent variable should be checked. According to (Hoaglin, Iglewicz, and Tukey, 1986; Hoaglin and Iglewicz,1987; Tukey, 1977), when the data set is normal, and the sample size is small one can use a factor of 2.2 to establish the upper and lower bounds for outlier testing. Therefore, the interquartile range was multiplied by 2.2. As shown in Appendix 3, the actual maximum is lower than the maximum limit (bound), therefore there are no outliers.

Assumption 4: The data needs to show homoscedastic. Levene's Test for Equality of Error Variances was used to confirm Homoscedasticity. Where Levene's Sigma is greater than 0.05 we do not reject the null hypothesis that there is an equality of error variances (hence homoscedasticity). As shown in Appendix 4, the Sigma is greater than 0.05, therefore all the variables show homoscedasticity.

Assumption 5: Residuals (errors) of the regression line are approximately normally distributed. From Levene's Test, we plotted the residual error to confirm Normality and used Kolmogorov-Smirnova and Shapiro-Wilk tests to confirm the normality of residual errors. As shown in Appendix 5, the Normal Q-Q Plot of Standardized Residual for Full AS Scale and Normal Q-Q Plot of Standardized Residual for AEI scale, the sigma is greater than 0.5. There is no evidence of significant deviation from normal behaviour. Furthermore, the plot of standardized residual errors (normality plot) shows that the points lie close to the diagonal line representing a normal distribution. Although the sigma is lower than 0.05, suggesting evidence of significant deviation

from normal behaviour, the plot of standardized residual errors (normality plot) shows that the points lie close to the diagonal line representing a normal distribution.

Assumption 6: Variables should be approximately normally distributed. As shown in appendix 6, although the sigma is lower than 0.05, suggesting evidence of significant deviation from normal behaviour, the plot of standardized residual errors (normality plot) shows that the points lie close to the diagonal line representing a normal distribution. As well, as discussed in the descriptives the values for Kurtosis and Skewness suggest that the data is relatively normal and unskewed. Generally, there is sufficient statistical evidence to conclude that the assumption for linear regression and Pearson's correlation is sufficiently satisfied by the data under analysis.

Descriptive statistic of scales

As this study has utilised psychometric measures to facilitate research it was important to check the internal consistency to see if they were fit for purpose (Taber, 2018). Cronbach's alphas for the 12 authenticity items and the 14 General well-being items were found to be .756 and .938 respectively, which indicates good internal consistency.

Analytical statistics

Hypotheses 1 results

H1 asserts that clients will experience personality change towards greater authenticity throughout therapy. To test this hypothesis linear regression analysis was conducted to investigate if an increasing amount of psychotherapy sessions could predict client scores on the Scale of Authenticity and subscales.

Linear regression result: Session ID and Full AS scores

A simple linear regression was used to predict full-scale client authenticity scores from the number of psychotherapy sessions undertaken. As shown in Table 4, A significant regression equation was found, $F(1, 644)=6.162$, $p= .013$, $R^2=.009$, $R2adjusted=.008$. The regression coefficient ($B=.013$) indicated that an increase in session ID by 1, on average, corresponded to an increase in full authenticity scale scores by .013 points. This conclusion was supported by the low p-value (.016), which is less than .05 (our alpha level). This indicates that the coefficient is significantly higher than 0 so we will not reject the hypothesis that client scores on the full authenticity scale increase over the course of successive psychotherapy sessions.

Linear regression results: Session ID and AL Subscale scores

Moving onto the AL subscale, Session_ID was unable to explain a significant amount of variance within AL subscale scores, $F(1,644)=.199$, $p=.656$, $R^2=.000$, $R2adjusted=-.001$. This negative regression coefficient ($B=-.003$) predicts that an increase in Session_ID by 1, on average, corresponds to a decrease in AL subscale scores by .003. However, this conclusion is not supported by the p-value (0.656) which is greater than 0.05(our alpha level). This indicates that the coefficient is not significantly higher than 0, so we fail to reject the null hypothesis. As such, the hypothesis that the AL scale scores improve with sessions is rejected suggesting other factors may affect AL greater than the number of therapy sessions.

Linear regression analysis of Session ID and AEI Subscale scores

Regression analysis was again conducted to predict client AEI subscale scores based on the number of psychotherapy sessions. Psychotherapy sessions were found not to be significant, $F(1,644)=0.753$, $p=0.386$, $R^2=0.001$, $R^2_{adjusted}=.000$. The regression coefficient ($B= -0.006$)

predicts that an increase in Session_ID by 1, on average, to a decrease AEI subscale score by 0.006. However, this conclusion is not supported by the p-value (0.386) as it is higher than our alpha level of 0.05. As such, the null hypothesis fails to be rejected suggesting that other variables affect AEI subscale scores.

Linear regression analysis of Session ID and SA Subscale scores

This study wanted to see if psychotherapy could predict a change in client authenticity. A significant regression was found F (1, 644) =16.950, $p<0.001$, $R^2=0.026$, R2adjusted=0.024. The regression coefficient (B=-.036) indicated that an increase in 1 Session ID, on average, corresponded to a decrease in SA subscale scores by 0.036. This conclusion is supported by the low p-value (<0.001) which is less than 0.05, our alpha value. This indicates that the coefficient is significantly higher than 0, so we will not reject the hypothesis the SA scores improve with psychotherapy sessions.

Linear regression analysis of Session ID and GWB scores

Similar to the test above, a simple regression was calculated to predict client GWB scores based on the number of psychotherapy sessions. A significant regression was found F(1, 644)= 23.524, $p<.001$, $R^2=0.035$, R2adjusted=.035. The regression coefficient (B=.022) indicated that an increase in Session ID by 1, on average, corresponded to a score increase of .022 on the GWB scale. This conclusion is supported by the low p-value (<0.001) which is less than our 0.05 alpha level. This indicates that the coefficient is significantly higher than 0 so the hypothesis that GWB scores increase with sessions is not rejected.

Hypotheses 2 Results

The following hypothesis was tested using Pearson's correlations analysis. H2 predicted that there would be a statistically significant correlation between client scores on both measures of

authenticity and well-being. However, H2 assumes the direction of the relationship between client scores across psychotherapy, which creates the risk of erroneously rejecting the hypothesis if the assumed direction is wrong. To avoid this, Field (2013) recommends using a non-directional two-tailed significance test. To test H2, Pearson's correlation was used to calculate the correlational coefficients for both scales and subscales. In addition to the original hypothesis, correlations between age and both scales and their subscales were also calculated. Results of the Bivariate Pearson's Correlation analysis are presented below (see Table 4.).

Table 4. Correlations

		Full AS Scale	AL Scale	AEI Scale	SA Scale	GWB Scale	Age
Full AS Scale	Pearson Correlation	1	.522**	-.736**	-.790**	.579**	-.045
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	.254
	N	646	646	646	646	646	646
AL Scale	Pearson Correlation	.522**	1	-.098*	-.087*	.227**	.027
	Sig. (2-tailed)	<.001		.013	.027	<.001	.496
	N	646	646	646	646	646	646
AEI Scale	Pearson Correlation	-.736**	-.098*	1	.428**	-.279**	.042
	Sig. (2-tailed)	<.001	.013		<.001	<.001	.283
	N	646	646	646	646	646	646
SA Scale	Pearson Correlation	-.790**	-.087*	.428**	1	-.636**	.067
	Sig. (2-tailed)	<.001	.027	<.001		<.001	.090
	N	646	646	646	646	646	646
GWB Scale	Pearson Correlation	.579**	.227**	-.279**	-.636**	1	-.146**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001
	N	646	646	646	646	646	646
Age	Pearson Correlation	-.045	.027	.042	.067	-.146**	1
	Sig. (2-tailed)	.254	.496	.283	.090	<.001	
	N	646	646	646	646	646	646

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Results of the Bivariate Pearson's correlation analysis revealed the following correlations of all

sampled client responses on the Scales and of Authenticity and Well-Being and associated subscales. Full AS Scale scores (*M = 4.16 SD = .989)* was revealed to share a moderately positive correlation, *r = .579* with client well-being scores. AL subscale scores *(M = 5.01, SD = 1.27)* were found to be weakly correlated, *r =.227* with well-being scores. Further analysis of AEI subscale scores (*M = 4.10, SD = 1.35)* revealed a weak negative correlation, *r = -.279* with well-being scores. As well, SA subscale scores (*M = 4.415, SD = 1.65)* revealed a moderately negative correlation, *r = -.636* with well=being scores. Finally, correlation with age (*M = 41.308, SD = 13.704)* was found to be negligible revealing extremely low correlations (see Table 4.).

Discussion

H1: Predicts person-centred psychotherapy clients will experience personality change towards greater authenticity

H2: Predicts a positive relationship between the client's change in authenticity and their subjective well-being.

Discussing linear regression results of H1

The results of this research have shed light on the nature of the authenticity well-being relationship within the psychotherapeutic context while also supporting key theoretical assumptions of the person-centred approach.

This study has shown that the relationship between authenticity and well-being, as it has been documented within the wider body of literature, also exists across psychotherapy sessions. Consequently, the theoretical assumption of Rogers (1959), that person-centred psychotherapy

can affect personality change towards greater authenticity, is supported, as this shift towards greater authenticity was associated with greater well-being and a more fully functioning person.

Specifically, regression analysis found that, on average, client scores on the full scale of authenticity increased with successive person-centred psychotherapy sessions. Linear regression indicated that Session ID was able to predict scores indicative of personality changes towards greater authenticity on the Full AS and SA subscale. Client scores on the full AS increased throughout the sampled therapy sessions indicating an improvement in client authenticity overall. Client SA subscale scores were found to decrease over the sampled therapy sessions suggesting that as the client progressed through therapy they became less self-alienating, moving towards greater authenticity. These results are not unexpected as the association between authenticity and person-centred psychotherapy has been long hypothesized (Rogers, 1959). However, AL client scores were found to decrease with therapy sessions, suggesting a departure away from authentic living throughout therapy. Unexpectedly, however, this result was found to be statistically insignificant, suggesting factors other than therapy impacted client AL scores. Similarly, AEI client scores were found to decrease over psychotherapy, suggesting the client became less accepting of external influences throughout therapy but again this result was not statistically significant. Considering linear regression failed to predict improved AEI and AL subscale scores across psychotherapy sessions, perhaps reconsidering the logic of the hypothesis is warranted. It was initially thought that as clients progressed through therapy, experiencing successive sessions, then perhaps there would be an associated change towards greater authenticity.

However, it may be that using increase psychotherapy sessions as a predictor of client authenticity is too broad of a predictor variable and that a more appropriate, specific predictor, is needed. After all, the psychotherapy session is a broad, multifaceted, and complex variable

comprised of many other factors. For example, Norcross, and Lambert, (2018), found that therapeutic alliance is a strong predictor of client outcomes. Other factors such as relational depth have also been found to be strongly associated with scores on the Scale of Authenticity, further suggesting that other aspects of the therapy session affected the current study's outcomes (Kim, Price, and Joseph, 2020). As such, the current study would need to be extended to test the above assumptions. As well, it is entirely possible that the therapists who offered the therapy that generated the data for the current study impacted research outcomes. As the therapists were still training, their proficiency and embodiment of the person-centred approach may vary and not be in line with the therapeutic way of being envisioned by Rogers, thus affecting therapeutic change. For Rogers, such change was possible only if the necessary and sufficient conditions of therapeutic personality change were present and offered in such a way that the client felt fully received, just as they were. Considering the nature of therapy training it is entirely possible that the therapy offered was not of sufficient quality to facilitate therapeutic personality change for these two subscales.

In addition to H1, this study also examined the association between successive therapy sessions and client well-being. The results indicated psychotherapy sessions were a statistically significant predictor of client GWB scores, finding that as clients progressed through the sampled therapy sessions, their GWB scores increased, suggesting their well-being improved over the course of therapy. Beyond the statistical significance of this outcome, this result adds to the growing body of literature supporting the association between engaging in therapy and experiencing increased well-being, potentially offering one of the first investigations into the association of person-centred psychotherapy and client well-being outcomes.

It is worth noting that although the above results did generally support the assumption that therapy is associated with personality change towards greater authenticity, the explanatory power of these results needs to be discussed to ground the implications of this study overall. Overall, the explanatory power of the reported results was low. The statistically significant results for The Full Authenticity Scale reported an R^2 value of .009 or .09% indicating that only .09% of the variance of overall client authenticity could be explained by the therapy session. What is more, only 2.6% of the variance in client SA scores could be explained by therapy sessions. Again, as stated above, extraneous variables could be to blame for the low correlation and statical power of the research findings of the current study. Despite this, these results add to the foundational base of research, reaffirming authenticity as a relational component of therapy that can be operationalised, observed, and measured within an ecologically valid environment of the psychotherapy session and sample of psychotherapy clients. Moreover, these results support and re-affirm Rogers's person-centred conception of therapeutic personality change, while bolstering the efficacy of the approach.

Discussion of H2 correlational results

The second hypothesis predicted that a positive relationship would exist between client authenticity and well-being within the context of successive psychotherapy sessions. Recall, that the correlation between authenticity and well-being was well documented within the research community. However, few studies examined the relationship from this perspective. The results of the current study addressed this. As predicted, authenticity was moderately correlated with well-being, as indicated by the Full AS scores. This suggests that, across all sampled therapy sessions, an improvement in one was associated with an improvement in the other. Thus, we can

confidently say that HFP clients who experienced a greater sense of authenticity, more than likely, experienced an associated increase in their sense of well-being.

However, this study also examined the individual facets of authenticity in relation to well-being, finding some interesting yet expected results. Unsurprisingly, AL scores were found to be positively correlated with well-being, albeit rather weakly, again suggesting that an increase in one is associated with an increase in the other. That said, the remaining two subscales, SA and AEI, seemingly violated H2 as they were found to be negatively correlated with well-being. Considering, SA and AEI scores represent the negative aspects of an individual's authentic experiences, it makes sense that they were negatively correlated with well-being. Considering Rogers's assumption regarding therapeutic personality change, as the individual progresses through therapy, experiencing personality change towards greater authenticity, it would be expected that experiences of SA and AEI would diminish, followed by an increase in well-being, which was found. As a result, not only has this study confirmed H2 and shown that the relationship describe in the wider body of literature also exists within psychotherapy, it has shown that Rogers's understanding of what therapy can offer and do for the individual was accurate.

These findings are consistent with several prior research findings. To start, the current study's results are in line with Boyraz, Waits, and Felix (2014) research that utilised the Scale of Authenticity, finding that such scores predicted well-being. Interestingly, Wood et al., (2008) reported a strong correlation of r = -.34 and -.50 between self-alienation and well-being during the development of the Scale of Authenticity which is consistent with the current study's reported strong correlation of r = .636. Importantly, this result adds to the convergent validity of the Scale of Authenticity with similar indices of well-being, initially reported by Wood et al.,

(2008). Overall, the above findings are not surprising as the relationship between authenticity and well-being is well documented. For example, Kolden et al., (2011a, 2011b) conducted a meta-analysis of 16 studies, representing 863 participants investigating the relationship between psychotherapy and outcomes for clients. They found a significant positive correlation of .23 between therapist congruence and client outcomes of enhanced well-being.

A major implication of the current study is that it affirms the efficacy of the therapy offered by the Human Flourishing Project and the benefit it affords the clients it services. Beyond that, it demonstrates that training therapists can offer therapy that is beneficial to clients and not just reserved for fully qualified therapists. As well, these findings offer support for understanding therapy in terms of promoting wellness rather than illness and symptom reduction while simultaneously making a case for the inclusion of person-centred constructs as indices of beneficial therapeutic outcomes. By showing that therapy-derived change in authenticity is associated with an increase in well-being, this study challenges the medical model understanding of therapeutic outcomes.

Lastly, a brief note on time and its inclusion within the current study. This study used data across several psychotherapy sessions implicitly incorporating an element of time into the analysis. Therefore, the above results can be framed temporally across the sampled therapy sessions. For H1 and H2, it is plausible to suggest that time could have a positive impact on the research sample. That is, increasing the amount of time spent in psychotherapy sessions (i.e., successive therapy sessions) could strengthen the association between client authenticity and well-being. However, further research is needed to see the full extent of time's impact on the variables under investigation.

Limitations of current study and future research

Using Session_ ID as a predictor variable may present some potential limitations. As mentioned briefly above, this variable is made of many other factors that could have limited the results of the study. It is recommended that future research implement a more robust statistical analysis to account for any extraneous variables that may impact client authenticity and well-being scores. Although this study was able to successfully see how both variables interacted with each other over the sampled therapy sessions, the correlational design was unable to assess causality between psychotherapy sessions and its effect on client authenticity and well-being scores. Therefore, it is recommended that future research incorporate a larger sample size from the data set to gain a clearer understanding of how these variables interact with each other. The data used for this study could have been impacted by social desirability effects as the research protocol of the Human Flourishing Project had respondents answer both measures of authenticity and well-being in the presence of their therapist. Therefore, it is entirely possible that respondents answered in a manner they felt would please their therapist, thus impacting the results of the current study. Although it was not possible in the current study, future data collection should be administered in a manner that protects against such effects. Another potential limitation of this study is the potential impact of confounding variables on research outcomes. Despite the potential limitations, this research offers further evidence of the relationship between these two variables for future researchers wanting to investigate potential cause and effect between therapy and client authenticity and well-being.

Conclusion

In conclusion, this study produced results that indeed support the proposed hypotheses and answered the research questions mentioned above. As a result, this investigation offers one of the

first studies examining the statistical relationship between authenticity and well-being within the research clinic setting, using the Scale of Authenticity and 14-Items Scales of General Well-Being. However, increasing psychotherapy sessions failed to predict scores on 2 of the subscales of authenticity that were indicative of personality change towards greater authenticity. Yet it was successful at predicting personality change towards authenticity on the Full AS and SA subscale. This study also wanted to see if the therapy session could be predictive of enhanced well-being, finding that this was indeed the case. When taken together, these results suggest that Rogers's concept of therapy facilitated change towards greater authenticity, was accurate. What is more, the findings of this study further support the notion that a change towards authenticity is synonymous with well-being, ultimately resulting in a more fully functioning person and way of being. With that, this study represents one of the latest contemporary evaluations of Rogers's concept and process of personality change within therapy. It is hoped that this study will serve as a motivator for future theorists and researchers to continue the investigation into the person-centred processes and therapy.

Disclosure Statement

There were no conflicts of interest raised by the author of this study.

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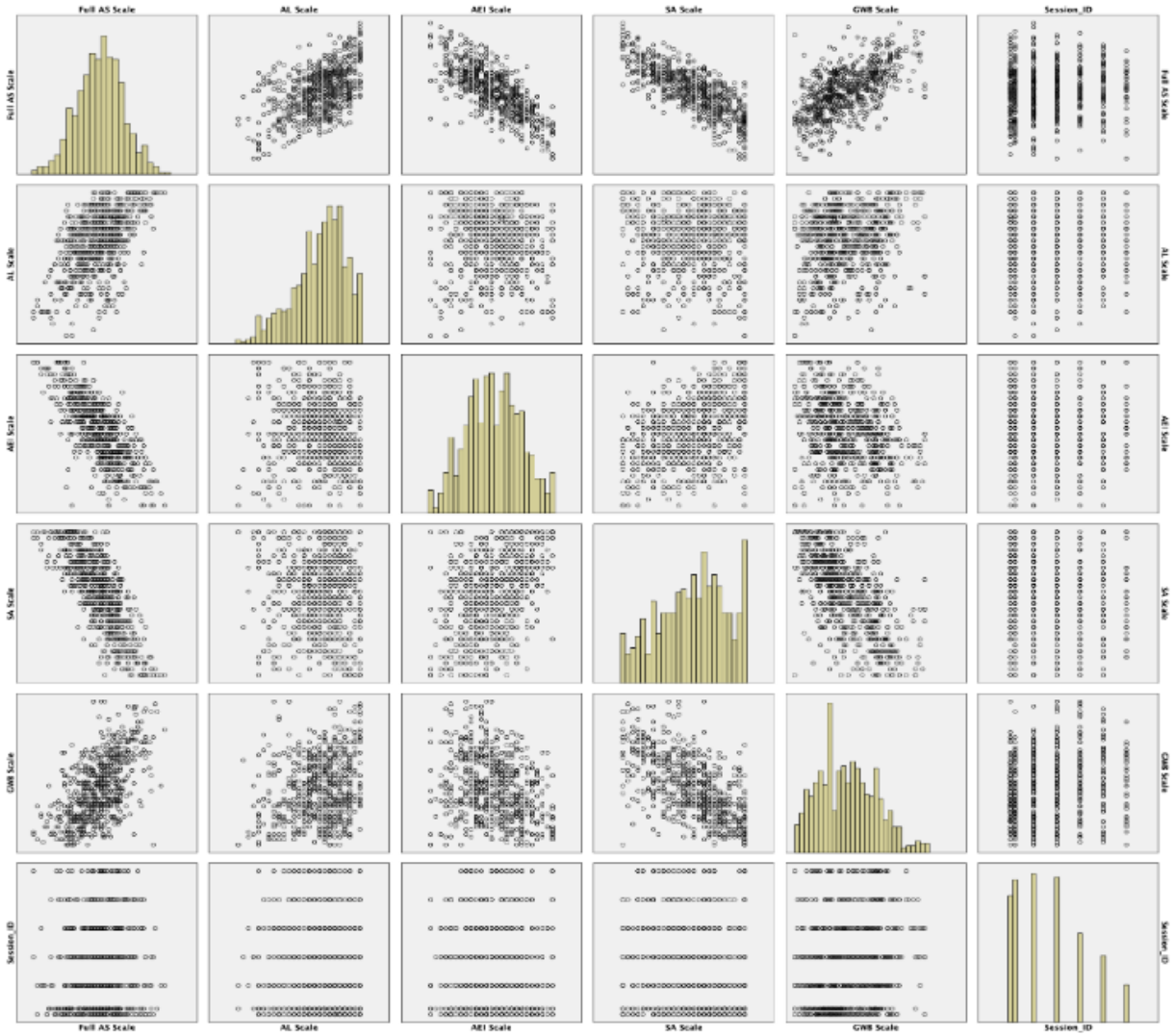
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Appendix 1: Assessment of Continuous measurement

Variable 1 (Dependent Variable)	Variable 2 (Independent Variable)	F	Sig	Pattern of Scatterplot	Conclusion
Full AS Scale	Session_ID	0.606	0.695	Random Pattern	We note that the sigma 0.695 is higher than our alpha (0.05), therefore we reject the hypothesis that there is a deviation from a linear behaviour. The scatter plot indicates a random pattern which is a valid scenario for use of linear regression
AL Scale	Session_ID	0.451	0.812	Random Pattern	We note that the sigma 0.812 is higher than our alpha (0.05), therefore we reject the hypothesis that there is a deviation from a linear behaviour. The scatter plot indicates a random pattern which is a valid scenario for use of linear regression
AEI Scale	Session_ID	0.312	0.906	Random Pattern	We note that the sigma 0.906 is higher than our alpha (0.05), therefore we reject the hypothesis that there is a deviation from a linear behaviour. The scatter plot indicates a random pattern which is a valid scenario for use of linear regression
SA Scale	Session_ID	0.785	0.56	Random Pattern	We note that the sigma 0.56 is higher than our alpha (0.05), therefore we reject the hypothesis that there is a deviation from a linear behaviour. The scatter plot indicates a random pattern which is a valid scenario for use of

					linear regression
General Well-Being	Full AS Scale	1.325	0.054	Linear Pattern	We note that the sigma 0.054 is higher than our alpha (0.05), therefore we reject the hypothesis that there is a deviation from a linear behaviour. Furthermore, the scatter graph of GWB and Full AS Scale indicates a linear relationship
General Well-Being	AL Scale	2.336	<.001	Linear Pattern	We note that the sigma <0.001 is lower than our alpha (0.05). We cannot reject the hypothesis that there is a deviation from the linear relationship. However, the scatter graph of GWB and AL Scale indicates a linear relationship
General Well-Being	AEI Scale	2.315	<.001	Linear Pattern	We note that the sigma <0.001 is lower than our alpha (0.05). We cannot reject the hypothesis that there is a deviation from the linear relationship. However, the scatter graph of GWB and AEI Scale indicates a linear relationship.
General Well-Being	SA Scale	1.173	0.262	Linear Pattern	We note that the sigma 0.262 is higher than our alpha (0.05), there we reject the hypothesis that there is a deviation from a linear behaviour. Furthermore, the scatter graph of GwB and SA indicates a linear relationship

Appendix 2: Linearity Scatterplots



Appendix 3: Outliers Check

Dependent Variables	Multiplication Factor (g)	Lower Bound Outlier 25th Percentile	75th Percentile	Interquartile Range	Minimum Limit	Actual Minimum
Full AS Scale	2.2	3.5	4.833	1.333	0.5674	1.333
AL Scale	2.2	4.25	6	1.75	0.4	1

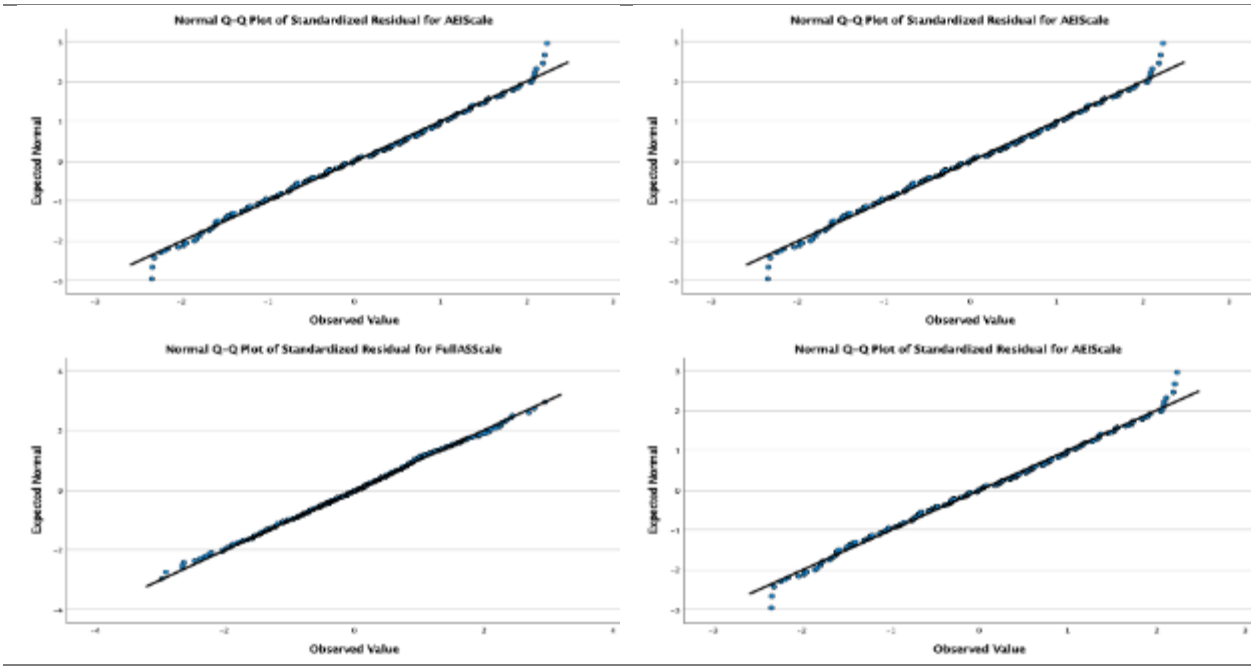
AEI Scale	2.2	3	5	2	-1.4	1
SA Scale	2.2	3.25	5.75	2.5	-2.25	1
General Wellbeing	2.2	1.929	3.214	1.285	-0.898	1

Appendix 4: Levenes Test for the Equality of Error Variance (Homoscedasticity Check)

Variable 1 (Dependent Variable)	**Variable 2 (Independent Variable)**	**Levene's Statistic**	**Sig**
Full AS Scale	Session_ID	0.746	0.613
AL Scale	Session_ID	0.546	0.878
AEI Scale	Session_ID	0.791	0.577
SA Scale	Session_ID	0.269	0.951

Appendix 5: Plotting residual Error to confirm normality and Q-Q plots.

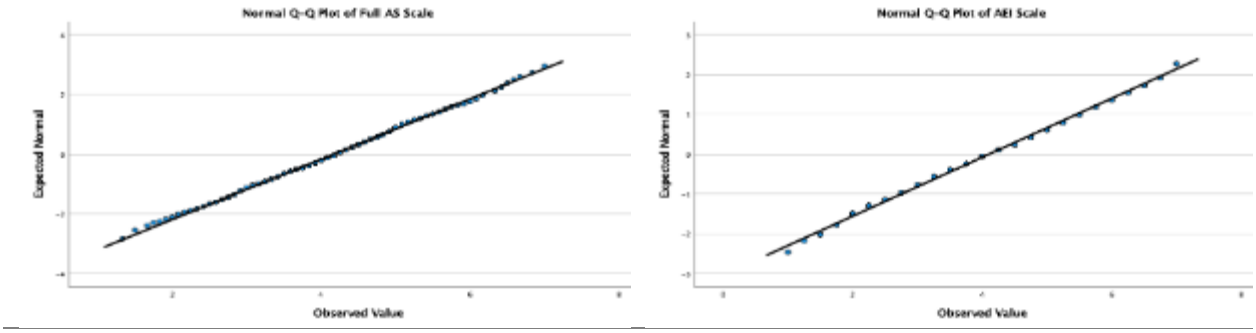
Kolmogorov-Smirnova		**Shapiro-Wilk**	
Residual Error	**Statistic**	**Sigma**	**Statistic**	**Sigma**
Standardized Residual for FullASScale	0.031	.200	0.998	0.691
Standardized Residual for AEIScale	0.044	0.005	0.992	0.002
Standardized Residual for SAScale	0.052	<.001	0.979	<.001
Standardized Residual for ALScale	0.088	<.001	0.961	<.001

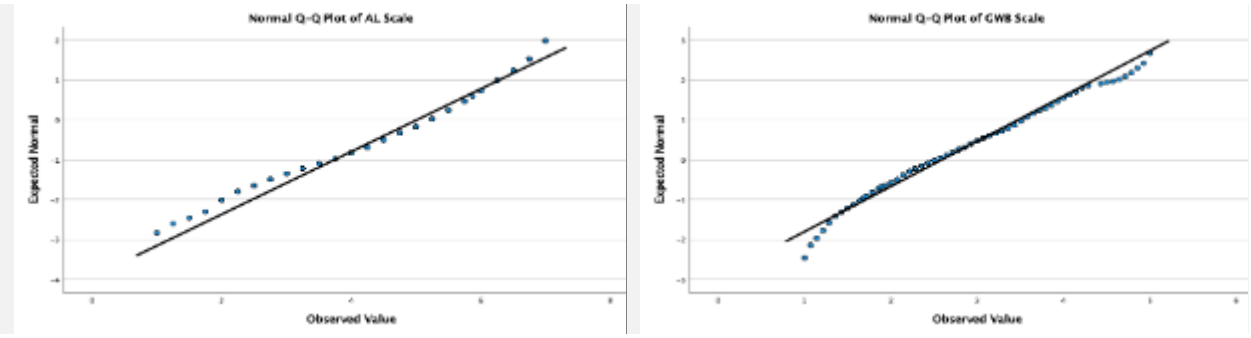


Appendix 6: Normality of Variables

Variable 1 (Dependent Variable)	**Statistic**	**Sigma**	**Statistic**	**Sigma**
Full AS Scale	0.037	0.031	0.997	0.404
AL Scale	0.106	<.001	0.957	<.001
AEI Scale	0.058	<.001	0.989	<.001
SA Scale	0.078	<.001	0.965	<.001
GWB	0.062	<.001	0.98	<.001

Conclusion: Although the sigma is lower than 0.05, suggesting evidence of significant deviation from normal behaviour, the plot of standardized residual errors (normality plot) show that the points lie close to the diagonal line representing a normal distribution.





Generally, there is sufficient statistical evidence to conclude that the assumption for linear regression and Pearson's correlation are sufficiently satisfied by the data under analysis

Appendix 7 – Authenticity Scale

This questionnaire consists of a number of statements about personal attitudes. There are no right or wrong answers. Using the 7-point scale shown below, please indicate how much each statement describes or does not describe you by ticking the representing box.

1. I think it is better to be yourself, than to be popular.
2. I don't know how I really feel inside.
3. I am strongly influenced by the opinions of others.
4. I usually do what other people tell me to do.
5. I always feel I need to do what others expect me to do.
6. Other people influence me greatly.
7. I feel as if I don't know myself very well.
8. I always stand by what I believe in.
9. I am true to myself in most situations.
10. I feel out of touch with the 'real me'.
11. I live in accordance with my values and beliefs.

12. I feel alienated from myself.

Scoring Instructions

All items are presented on a 1(does not describe me at all) to 7 (describes me very well) scale. Total Items 1, 8, 9, and 11 for Authentic Living; Items 3, 4, 5, and 6 for Accepting External Influence; and Items 2, 7, 10, and 12 for Self-Alienation.

Appendix B: 14-item Scales of General Well-being (14-SGWB)

14-item Scales of General Well-Being (14-SGWB)

Instructions

Below you'll find fourteen statements about your experiences. Please indicate how true each statement is regarding your EXPERIENCES OVER THE PAST WEEK. There are no right or wrong answers. Please, choose the answer that best reflects your experience rather than what you think your experience should be.

	Not at all true	A bit true	Somewhat true	Mostly true	Very true
1. I feel happy	☐	☐	☐	☐	☐
2. I feel energetic	☐	☐	☐	☐	☐
3. I feel calm	☐	☐	☐	☐	☐
4. I'm optimistic	☐	☐	☐	☐	☐
5. In my activities, I feel absorbed by what I'm doing	☐	☐	☐	☐	☐
6. I'm in touch with how I really feel inside	☐	☐	☐	☐	☐
7. I accept most aspects of myself	☐	☐	☐	☐	☐
8. I feel great about myself	☐	☐	☐	☐	☐
9. I am highly effective at what I do	☐	☐	☐	☐	☐
10. I feel I am improving	☐	☐	☐	☐	☐
11. I have a purpose	☐	☐	☐	☐	☐
12. What I do in my life is worthwhile	☐	☐	☐	☐	☐
13. What I do is consistent with what I believe I should do	☐	☐	☐	☐	☐
14. I feel close and connected to the people around me	☐	☐	☐	☐	☐

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